IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An apparatus for controlling a temperature of a substrate, the substrate having a lower surface and an upper surface on which a substrate processing is performed, the apparatus comprising:

a substrate table having a thermal surface supporting the substrate lower surface;

a thermal assembly arranged in the substrate table and in thermal communication with the thermal surface, the thermal assembly comprising a channel that carries a heat-transfer fluid; and

a fluid thermal unit constructed and arranged to adjust a temperature of the heat-transfer fluid, the fluid thermal unit comprising:

a first fluid unit constructed and arranged to control the temperature of the heat-transfer fluid to a first temperature;

a second fluid unit constructed and arranged to control the temperature of the heat transfer fluid to a second temperature; and

an outlet flow control unit, including a mixing unit [[mixer]], that is in fluid communication with the channel of the thermal assembly and the first and second fluid units, the outlet flow control unit being constructed and arranged to supply the channel with a controlled heat transfer fluid comprising at least one of the heat-transfer fluid having a first temperature, the heat transfer fluid having a second temperature or a combination thereof[[.]] ; and

said mixing unit comprising a mixing flow chamber having a mixing flow surface, wherein the heat-transfer fluid having a first temperature and the heat-transfer fluid having a second temperature are mechanically mixed within said mixing flow chamber.

2. (Original) An apparatus as recited in claim 1, further comprising an inlet distribution unit that is in fluid communication with the channel of the thermal assembly and the first and second fluid units, the inlet distribution unit being constructed and arranged to control a volume, a flow rate, or combination thereof of controlled heat transfer fluid flowing

to the first fluid unit and a volume, a flow rate, or combination thereof of controlled heat transfer fluid flowing to the second fluid unit.

3. (Original) An apparatus as recited in claim 1, wherein each of the first and second fluid units comprises a storage fluid tank, a pump, a heater and a cooler.

4. (Original) An apparatus as recited in claim 1, further comprising a temperature control system constructed and arranged to control a supply of the controlled heat-transfer fluid based upon a temperature of one of the substrate surface, the thermal surface and the controlled heat-transfer fluid in the channel.

5. (Original) An apparatus as recited in claim 1, further comprising a temperature sensor constructed and arranged to detect a temperature of one of the thermal surface, the substrate surface and the controlled heat-transfer fluid in the channel.

6. (Original) An apparatus as recited in claim 1, wherein each of the first and second fluid units comprises a temperature sensor to detect a temperature of the heat-transfer fluid inside the unit.

7. (Original) An apparatus as recited in claim 3, wherein each of the first and second fluid units further comprises a level sensor configured to detect a volume of heat-transfer fluid in the storage fluid tank.

8. (Original) An apparatus as recited in claim 2, wherein the outlet flow control unit is in a cooperative relationship with the inlet distribution unit such that a volume of heat-transfer fluid located in each of the first and second units is substantially constant.

9. (Original) An apparatus as recited in claim 1, wherein the outlet flow control unit comprises a first valve constructed and arranged to allow the heat-transfer fluid having a first temperature to flow from the first fluid unit and a second valve constructed and arranged to allow the heat-transfer fluid having a second temperature to flow from the second fluid unit.

10. (Original) An apparatus as recited in claim 1, wherein the first fluid unit comprises a storage fluid tank and a heater and wherein the second fluid unit comprises a storage fluid tank and a cooler.

11. (Original) An apparatus as recited in claim 1, wherein one of the first fluid unit and the second fluid unit is located remotely from the substrate table.

12. (Original) An apparatus as recited in claim 1, wherein the thermal surface is located within a vacuum process chamber.

13. (Original) An apparatus as recited in claim 12, wherein the vacuum process chamber is a plasma process chamber.

14. (Original) An apparatus as recited in claim 1, further comprising an electrode arranged in the substrate table and configured to electro-statically clamp the substrate to the thermal surface of the substrate table.

15. (Original) An apparatus as recited in claim 1, further comprising a second thermal assembly in thermal communication with the thermal surface.

16. (Original) An apparatus as recited in claim 15, wherein the second thermal assembly comprises a plurality of thermoelectric modules.

17. (Original) An apparatus as recited in claim 1, further comprising a gas conduit passing through the substrate table and having a first end open to the thermal surface and a second end opposite the first end such that a gas can flow through said conduit and provide backside pressure to the substrate.

18. (Original) An apparatus as recited in claim 1, further comprising an RF power plate arranged in the substrate table and an RF power connector that connects the RF power plate to an RF power supply.

19. (Original) An apparatus as recited in claim 1, further comprising at least one pin constructed and arranged to place and remove the substrate on the thermal surface wherein the at least one pin passes through the thermal assembly.

20. (Original) An apparatus as recited in claim 1, further comprising mechanical or suction clamps to clamp the substrate.

21. (Original) An apparatus as recited in claim 4, wherein the temperature control system is further configured to prevent temperature overshooting during fast heating or fast cooling of the thermal surface.

22. (Original) An apparatus as recited in claim 21, wherein during fast heating the temperature of the thermal surface increases quickly and then slowly when the temperature of the thermal surface is substantially close to a desired temperature.

23. (Original) An apparatus as recited in claim 21, wherein during fast cooling the temperature of the thermal surface decreases quickly and then slowly when the temperature of the thermal surface is substantially close to a desired temperature.

24. (Currently Amended) A distributed temperature control system for controlling a temperature of a plurality of equipment, each of the plurality of equipment having a channel that carries a heat-transfer fluid, the system comprising:

a fluid thermal unit constructed and arranged to adjust a temperature of the heat-transfer fluid for each of the plurality of equipment, the thermal unit comprising:

a first fluid unit constructed and arranged to control the temperature of the heat-transfer fluid to a first temperature;

a second fluid unit constructed and arranged to control the temperature of the heat transfer fluid to a second temperature; ~~and~~

an outlet flow control unit, including a mixing unit [[mixer]], that is in fluid communication with the channel of each of the plurality of equipment and the first and second fluid units, the outlet flow control unit being constructed and arranged to supply the channel of each of the plurality of equipments with the controlled heat transfer fluid

comprising at least one of the heat-transfer fluid having a first temperature, the heat transfer fluid having a second temperature or a combination thereof[[.]] ; and

said mixing unit comprising a mixing flow chamber having a mixing flow surface, wherein the heat-transfer fluid having a first temperature and the heat-transfer fluid having a second temperature are mechanically mixed within said mixing flow chamber.

25. (Withdrawn) A method of controlling a temperature of a substrate supported by a thermal surface of a substrate table, the substrate table including a fluid thermal assembly in thermal communication with the thermal surface, the method comprising:

adjusting a heat-transfer fluid of a first source of heat-transfer fluid to a first temperature;

adjusting a heat-transfer fluid of a second source of heat-transfer fluid to a second temperature; and

supplying the fluid thermal assembly with a controlled heat-transfer fluid comprising the heat-transfer fluid from the first source of heat-transfer fluid or the heat-transfer fluid from the second source of heat-transfer fluid, or a combination thereof.

26. (Withdrawn) A method as recited in claim 25, wherein during an initial stage of a heating or a cooling phase the supplying comprises supplying the fluid thermal assembly with only the heat-transfer fluid from the first source of heat-transfer fluid or the heat-transfer fluid from the second source of heat-transfer fluid.

27. (Withdrawn) A method as recited in claim 26, further comprising overheating or overcooling the heat-transfer fluid from the first source of heat-transfer fluid or the heat-transfer fluid from the second source of heat-transfer fluid.

28. (Withdrawn) A method as recited in claim 25, wherein in anticipation of a heating phase or a cooling phase the method further comprises increasing an amount of heat-transfer fluid in the first source of heat-transfer fluid or the second source of heat-transfer fluid.

29. (Withdrawn) A method as recited in claim 26, wherein the method further comprises increasing a flow rate of the controlled heat-transfer fluid supplied to the fluid thermal assembly.

30. (Withdrawn) A method as recited in claim 25, further comprising detecting a temperature of the controlled heat-transfer fluid, the thermal surface or the substrate and controlling the supplying based on the detected temperature.

31. (Withdrawn) A method as recited in claim 25, further comprising controlling the supplying on the basis of readable instructions of a programmed process scenario.